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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,307	03/12/2004	Jae-Hyun Kim	8054-50 (LW9007US/HJ)	8101

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F. CHAU & ASSOCIATES, LLC
130 WOODBURY ROAD
WOODBURY, NY 11797

EXAMINER	
CHIEN, LUCY P	

ART UNIT	PAPER NUMBER
2871	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/799,307	KIM ET AL.	
	Examiner	Art Unit	
	LUCY P. CHIEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8,9,12-17 and 19-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17,19-25 and 28-31* is/are allowed.

6)☒ Claim(s) *8,9,12-16 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claim 8,9,12-17,19-31 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 8,9,12,14-16,26,27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al (US 6774965) and of Okamoto (US 20030067570) and of Baek (US 6580480) in view of Sakamoto et al (US 7015996)

Regarding Claim 8,

Nakashima et al discloses (Fig. !a-1G, and Fig 9) a lower substrate having a switching device (1,3,4),an organic insulating layer (8) formed on the switching device (TFT) in the first area; a pixel electrode (9) formed on the organic insulating layer (8) and connected to a drain electrode (6) of the switching device, and a reflecting plate 10,11) formed on the pixel electrode (9) with a transmission window (transmitting section) wherein the reflecting plate (10,11) has an edge partially extended o the

transmitting area (where 10 is pointing to in Fig. 1G)(second area); and a liquid crystal interposed between the upper and lower substrates,

Nakashima et al does not disclose wherein the transmission window is defined by at least three sides of the reflecting plate, and a portion of the first side of the three sides and a portion of a second side adjacent to the first side of the three sides are extended to be connected with the pixel electrode. Nor that the color filters corresponding to the reflecting regions have a smaller thickness than the transmissive region color filter and wherein the pixel electrode has a first height at the reflecting area and a second height at the transmitting area wherein the first height is greater than the second height with respect to the substrate; wherein the color pixel directly contacts the upper substrate without an intervening layer throughout the first area and the second are. And a boundary between the first thickness and the second thickness of the color pixel substantially coincides with a boundary between the first area and the second area.

Okamoto et al disclose wherein the transmission window is defined by at least three sides of the reflecting plate, (as shown in Fig. 23a) and a portion of the first side of the three sides and a portion of a second side adjacent to the first side of the three sides are extended to be connected with the pixel electrode [0536] in order to provide a large transmission display opening (19a).

Baek et al (Fig. 3) discloses a boundary between the first thickness and the second thickness of the color pixel substantially coincides with a boundary between the first area (reflecting area) and the second area (transmitting area) to improve the color

purity of the light passing through the color filters (column 2, rows 64-67 to column 3, rows 1-10).

Sakamoto et al discloses (Fig. 9 and Column 11, rows 30-42) the color filter layer (26) directly contacting the upper substrate (27) without an intervening layer, in the transmitting portion is twice as large as the thickness of the color filter in the reflective portion to improve the color purity of the light passing through the color filter in the transmissive region. (Column 11, rows 30-42) therefore the pixel electrode has a first height (dr) at the reflecting area and a second height (df) at the transmitting area wherein the first height is greater than the second height with respect to the substrate.

It would have been obvious to one of ordinary skill in the art, at the time of the invention to combine the teaching of Nakashima to include Okamoto et al's transmission window defined by at least three sides of the reflecting plate, (as shown in Fig. 23a) and a portion of the first side of the three sides and a portion of a second side adjacent to the first side of the three sides are extended to be connected with the pixel electrode [0536] in order to provide a large transmission display opening (19a). to include Baek et al's first and second thicknesses coinciding with the boundary between the first and second area motivated by the desire to improve the color purity of the light passing through the color filters to include Sakamoto et al's color filter thickness to improve the color purity of the light passing through the color filter in the transmissive region to create a bright display. (Column 11, rows 30-42)

Regarding Claim 9,

In addition to Nakashima et al, Okamoto et al, Baek et al , and Sakamoto et al as disclosed above, Sakamoto et al discloses (Column 11, rows 30-42) the color filter layer in the transmitting portion (fourth thickness as claimed in claim 9) is twice as large as the thickness of the color filter in the reflective portion (third thickness claimed in claim 9) to improve the color purity of the light passing through the color filter in the transmissive region. (Column 11, rows 30-42).

Regarding Claim 12.

In addition to Nakashima et al, Okamoto et al, Baek et al , and Sakamoto et al as disclosed above, Okamoto et al discloses wherein the lower substrate further comprises a rubbed alignment layer formed on the reflecting plate so as to align the liquid crystal layer and a connection shape between the reflecting plate and the pixel electrode depends upon a rubbing direction of the rubbed alignment layer (Fig. 5).

Regarding Claim 14.

In addition to Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al as disclosed above, Okamoto et al discloses the lower substrate having a first alignment layer rubbed in a first direction and a second alignment layer rubbed in a second direction opposite to the first direction so the liquid crystal layer would be in a stable state.(Fig. 5)

Regarding Claim 15.

In addition to Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al as disclosed above, Okamoto et al discloses in Figure 23(a) the width of the pixel electrode in the first direction is smaller than the width of the pixel area in the first direction.

Regarding Claim 16,

In addition to Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al as disclosed above, Okamoto et al further discloses in Figure 23(a) the width of the pixel electrode in the first direction and width of the pixel electrode in the second direction are smaller than a width of the pixel area in the first direction and a width of the pixel area in the second direction.

Regarding Claim 26,

In addition to Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al as disclosed above, Nakashima et al (Fig. 9) discloses the first edge of the reflecting plate (10,11) is extended from two sides of a transmissive window to avoid alignment defect of liquid crystals due to a difference in level on the organic layer which decreases display quality (Column 8, rows 13-25)

Regarding Claim 27,

In addition to Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al as disclosed above, Nakashima et al disclsoes wherein a length of the first edge of the reflecting plate is about 8 mu.m (2-6 mu.m is about 8 mu.m, applicant does not claim that it is 8.mu.m) wherein the first edge of the reflecting plate is extended from two sides of a transmissive window.(Column 2, rows 39-41).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable Nakashima et al (US 6774965) and of Okamoto et al (US 20030067570) and of Baek et al (US 6580480) and of Sakamoto et al (US 7015996)in view of Ha et al (US 6704081).

Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al disclose everything as disclosed above.

Nakashima et al, Okamoto et al, Baek et al, and Sakamoto et al do not disclose positioning of the reflecting plate and pixel electrode comprised of L-shapes.

Ha et al discloses in Figure 12 the pixel electrode (230) electrically connected to a reflecting plate (226) comprises an L-shaped when the rubbing direction is –45 degrees. (Column 6 Row 66 and Column 7, Row 1-7) teaches the location of the reflector on the sides of the transmission region is determined by the alignment direction by the rubbing direction. Therefore, it is obvious to have the rubbing direction in the desired 10,11,1,2, and 12 o clock to make the L-shape of the area where reflecting plate is connected to the pixel electrode.

It would have been obvious to one of ordinary skill in the art, at the time of the invention modify Nakashima et al, Okamoto et al , Baek et al, and Sakamoto et al's color filter thickness to include Ha's rubbing direction to determine the location of the reflector on the side of the transmission area. (Column 6 Row 66 and Column 7, Row 1-7)

Allowable Subject Matter

Claims 17,19,20,28,29 are allowed.

Regarding Claim 17,

Kim et al al (US 6720580) discloses (Fig. 3b) a switching device (22a) formed in a pixel area that is defined by a gate line (22a) and a source line disposed on the first substrate, the gate line extended in a first direction and arranged in a second direction

substantially perpendicular to the first direction, the Source line extended in the second direction and arranged in the first direction (shown in Fig. 3a); a pixel electrode (29) connected to a drain electrode (25b) of the switching device; and a reflecting plate (27) disposed on the pixel electrode (29) so as to define a reflecting area from which the natural light is reflected and a transmitting area through which the artificial light is transmitted, wherein the pixel electrode (29) has a first height at the reflecting area (shown below) and a second height at the transmitting area, wherein the first height is greater than the second height with respect to the first substrate (21), and wherein the reflecting plate (27) has a first edge extended to the transmitting area an insulating layer (26) formed on the switching device and the first substrate with a first contact hole through which the drain electrode (25b) is partially exposed; and an organic insulating layer (28)(Column 6, row 64) formed on the reflecting area with a second contact hole corresponding to the first hole so as to expose the drain electrode (25b).

Kim et al does not disclose the reflecting plate has a first edge extending into the second area (transmissive area). And a protecting layer formed on the pixel electrode connected to the drain electrode through the second and first contact holes wherein the reflecting plate is formed on the protecting layer.

Nakashima et a (US 6774965) I (Fig. 9) discloses the reflecting plate (10,11) having a first edge extended to the two sides of transmitting area to avoid alignment defect of liquid crystals due to a difference in level on the organic layer which decreases display quality (Column 8, rows 13-25).

Jang discloses (US 5767927) (Fig. 2d) a protecting layer (19) formed on the pixel electrode (18) connected to the drain electrode through the second and first contact holes to orientate the liquid crystal molecules.

The prior art does not disclose nor would it have been obvious to one of ordinary skill in the art to disclose an insulating layer and organic insulating layer formed on the first area with a second contact hole corresponding to the first contact hole so as to expose the drain electrode; and a protecting layer formed on the pixel electrode connected to the drain electrode through the second and first contact holes wherein the reflecting plate is formed on the protecting layer.

Claim 19,20,28,29 depend on Claim 17, therefore are allowable.

Claim 21-25,30,31 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose nor does not reasonably a pixel electrode partially formed on the insulating layer, and connected to the drain electrode through the contact hole; an organic insulating layer formed on the insulating layer and the pixel electrode in the reflecting area to expose the pixel electrode corresponding to the tranmitting area; an inter-insulating layer formed on the organic layer corresponding to the reflecting area; and a reflecting plate disposed on the inter-insulating layer so as to define the reflecting area and the transmitting area, the reflecting plate having a first edge extended to the transmitting area to connect the reflecting plate to the pixel electrode.

Claims 22-25,30,31 are dependent on Claim 21 and are therefore are allowable.

It is the examiners opinion that these limitations show novelty over the prior art and are therefore allowable.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUCY P. CHIEN whose telephone number is (571)272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
Art Unit 2871

/David Nelms/
Supervisory Patent Examiner, Art Unit 2871